

ILLDELAY

Illustration of Effects of Substituted Work on Unabsorbed Overhead

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**Defense Contract Audit Agency
Delay/Disruption Proposal or Claim**

Eichleay Formula

Illustration of Effects of Substituted Work on Unabsorbed Overhead

The following example illustrates that use of the basic Eichleay formula to compute unabsorbed overhead results in over recovery of damages for unabsorbed overhead where the contractor has replaced some portion of the contract delayed work either by intentional substitution or acceleration of other work. In addition to the type of over recovery shown in the example, the Eichleay formula inevitably produces over recovery of another type, which is evident when all (100%) of the delayed contract work is replaced. This happens because the contract billings numerator, used in developing the contract allocation ratio in Step 1 of the Eichleay formula, never changes, in spite of the degree of substitution. This numerator (contract billings) would have to decrease to zero for 100% substitution to be adequately reflected in the Eichleay formula.

E-Z Money Corporation has only two contracts scheduled for 19X1, A and B (both fixed price contracts). Contract A is supposed to run from 1 January 19X1 to 31 December 19X1. However, the government caused a delay of the performance of work on Contract A. Thus Contract A does not start until 1 January 19X2 and is completed on 31 December 19X2. Contract A has an estimated contract price of and actual billings (revenues) of \$1,500,000. Contract B has estimated revenues of \$1,500,000 and a projected/actual performance of 1 January 19X1 to 31 December 19X2. Fixed overhead is \$100,000 per annum. E-Z money is able to replace 25% (\$125,000/\$500,000) of Contract A work with the new Contract C in 19X1, bid, awarded and performed after the start of the delay. Contract C has an estimated contract price of and actual billings (revenues) of \$375,000.

| Planned/Estimated FY 19X1 | | |
|--|-------------------------------|-------------------------------|
| | Contract A | Contract B |
| Direct Labor | \$500,000 | \$500,000 |
| Fixed Overhead $\frac{\$100,000}{\$1,000,000} = 10\%$ | \$50,000 (10% x \$500,000) | \$50,000 (10% x \$500,000) |

| Actual FY 19X1 | | | |
|--|------------|----------------------------------|-------------------------------|
| | Contract A | Contract B | Contract C |
| Direct Labor | \$0 | \$500,000 | \$125,000 |
| Fixed Overhead $\frac{\$100,000}{\$625,000} = 16\%$ | \$0 | \$80,000 (16% x \$500,000) | \$20,000 (16% x \$125,000) |

The use of a direct labor base for the allocation of fixed overhead is for illustrative purposes only. Contractors could also use total cost input or cost of sales, etc. depending on their accounting systems.

Contract C replaced 25% of the work planned for Contract A in FY 19X1 that resulted in substituting 40% of (\$20,000/\$50,000) the planned fixed overhead allocable to Contract A. The unabsorbed overhead that actually occurred was \$30,000 (\$50,000 planned fixed overhead on Contract A -- \$20,000 substituted fixed overhead = \$30,000 unabsorbed overhead).

Eichleay Formula

The example provided above, showed that unabsorbed overhead considering the substituted work was actually \$30,000. The following will show how the Eichleay formula will lead to over recovery, even if the substituted work is included in the denominator of the formula allocation ratio. (Refer to Enclosure 4 for details of the Eichleay formula):

| |
|--|
| Step 1. Fixed Overhead Allocable to Contract |
| $\$1,500,000/\$3,375,000* = 44.4\% \times \$200,000 = \$88,800$ <p>*Contract A \$1,500,000 + Contract B \$1,500,000 + Contract C \$375,000 = \$3,375,000</p> |
| Step 2. Daily Contract Fixed Overhead Rate |
| $\$88,800/730 \text{ days} = \121.64 |
| Step 3. Unabsorbed Overhead |
| $\$121.64 \times 365 \text{ days} = \$44,399$ |

As concluded above, the actual amount of unabsorbed overhead considering substituted work should be \$30,000. However, the Eichleay formula computes unabsorbed overhead to be \$44,399, an excess of \$14,399 (\$44,399 -- \$30,000). The problem is that the formula only recognizes a portion of the substituted work, in this case, approximately \$5,601 [\$20,000 (the amount of fixed overhead absorbed by the substituted work) less \$14,399 (the amount of substituted work overhead that was not recognized)]. The amount of unrecognized substituted work in the Eichleay will vary, based on several factors such as the contract allocation ratio (Step 1 of the Eichleay formula).

The fact that the Eichleay formula does not adequately account for the effects of substituted work makes it imperative that the auditor attempt to estimate the actual unabsorbed overhead through other audit techniques (see steps in F.11). The auditor's estimate should be shown in detail in the audit report and contrasted with the results of the Eichleay formula in order to highlight the difference.

This illustration is limited to showing how the Eichleay formula underestimates the impact of substituted work. In most circumstances when work is shifted to a later period than planned, further analysis of the facts would be necessary to consider whether (1) the contractor was operating at less than full capacity and the impact on the planned overhead, (2) other planned work was turned away because there was insufficient capacity to perform the delayed work, and (3) other work acquired during the delay period was priced using higher indirect rates because of the delayed work. The impact of any of these circumstances would impact the amount of unabsorbed overhead.